

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 2540-0597	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US03/04707	International filing date (day/month/year) 19 February 2003 (19.02.2003)	Priority date (day/month/year) 15 February 2002 (15.02.2002)
International Patent Classification (IPC) or national classification and IPC IPC(7): HO4N 7/173 and US Cl.: 725/98		
Applicant AVOCENT CORPORATION		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>4</u> sheets.</p> <p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of report with regard to novelty, inventive step and industrial applicability IV <input checked="" type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application 		
Date of submission of the demand 10 September 2003 (10.09.2003)	Date of completion of this report 30 August 2004 (30.08.2004)	
Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230		Authorized officer John W. Miller Telephone No. 703-308-HELP

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International application No.

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I. Basis of the report**1. With regard to the elements of the international application:***

- ☐ the international application as originally filed.
- ☒ the description:
pages 1-18 _____ as originally filed
pages NONE _____, filed with the demand
pages NONE _____, filed with the letter of _____.
- ☒ the claims:
pages 21 _____, as originally filed
pages NONE _____, as amended (together with any statement) under Article 19
pages 19-20, 22-23 _____, filed with the demand
pages NONE _____, filed with the letter of _____.
- ☒ the drawings:
pages 1-8 _____, as originally filed
pages NONE _____, filed with the demand
pages NONE _____, filed with the letter of _____.
- ☐ the sequence listing part of the description:
pages NONE _____, as originally filed
pages NONE _____, filed with the demand
pages NONE _____, filed with the letter of _____.

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages NONE
- ☐ the claims, Nos. NONE
- ☐ the drawings, sheets/fig NONE

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

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IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
- ☒ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention is accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
- ☒ not complied with for the following reasons:

Group I: 1-7 and 11-15. Group II: 8-10. Group III: 16-20

Group I, claim(s) 1-7 and 11-15, drawn to an analog video switch with memory, testing circuit, and an equalizer circuit.

Group II, claim(s) 8-10 drawn to de-screw circuitry including square up and phase detector circuitry.

Group III claim(s) 16-20, drawn to a cable connector

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☒ all parts.
- ☐ the parts relating to claims Nos. _____

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V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. STATEMENT

Novelty (N)	Claims <u>1-20</u>	YES
	Claims <u>NONE</u>	NO
Inventive Step (IS)	Claims <u>1-15</u>	YES
	Claims <u>16-20</u>	NO
Industrial Applicability (IA)	Claims <u>1-20</u>	YES
	Claims <u>NONE</u>	NO

2. CITATIONS AND EXPLANATIONS

Please See Continuation Sheet

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

V. 2. Citations and Explanations:

Claims 1-7 and 11-15 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest an analog video switch with a memory device to store a predetermined table of response characteristics of a specified conductor paths type when said conductor path type receives a set of predetermined frequency tones; [and] a testing circuit in communication with the different conductive paths to record a measured response of said conductive paths to said set of predetermined frequency tones; [and] an equalizer circuit to apply compensation signals ... in relation to said measured response.

Claims 8-10 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest analog video de-skew circuitry for video compensation of color video transmitted on cables having different transmission delays with a switch, square up circuitry, a phase detector, and an "integrator coupled to the output of the phase detector; a digitizer to digitize the output of the integrator; a processor to produce control signals in response to the output of the integrator; and delay circuits to impose selective delays on the three color video components based on the control signals."

Claims 1-7 and 11-15 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

Claims 8-10 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

Claims 16-20 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

Claims 16-20 lack an inventive step under PCT Article 33(3) as being obvious over Adriaenssens et al. (5,997,358).

With respect to claim 16, the claimed cable connector to electrically couple conductive transmission lines is met as seen in Fig. 6. As taught in col. 6:43-65 eight conductive paths may be provided as claimed, as seen in Fig. 6 these conductive paths are arranged in a "housing containing electrical conductors" with "one of the fifth and sixth conductors is physically closer to the seventh and eighth conductors." The conductive paths may be crossed via a "capacitive element" to reduce crosstalk in the connector, including between "one of the other fifth and sixth conductors and one of the seventh and eighth conductors" is seen in Figs 9 and 10, also showing conductive path pairs. These pairs, however, are not explicitly taught by Adriaenssens to be red, green, and blue conductors for carrying differential analog and digital signals. However, it would have been obvious for one of ordinary skill in the art at the time of the invention to modify the system of Adriaenssens by coloring the conductive paths and allowing analog and digital signals in order to allow a user to accurately differentiate the conductive paths and utilize the connector to carry varying signal types.

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Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

With respect to claim 17, the claimed capacitive element "to substantially neutralize the effect of induced capacitive coupling between said physically closer one of said fifth and sixth conductors and said physically closer seventh or eighth conductors" is taught in col. 5:54+ through col. 6:32.

With respect to claim 18, the claimed order of connectors is met with reference to Fig. 6. Examiner notes that when interpreting this claim, numbering of conductors is entirely discretionary.

With respect to claim 19, the claimed arrangement in a line with fourth, third, sixth, second, first, fifth, eighth, and seventh conductor with a capacitive element between the sixth and eighth conductor is met as previously noted by using capacitive elements between conductors. See also Fig. 9 and 10. Again, examiner notes that when interpreting this claim, numbering of conductors is entirely discretionary.

With respect to claim 20, the claimed value being selected to equate the inter-conductor capacitance between "the sixth and eighth conductors and the fifth and eighth conductors" is met as previously noted in col. 5:54+ through col. 6:32.

Claims 16-20 lack an inventive step under PCT Article 33(3) as being obvious over Hashim (5,967,853).

With respect to claim 16, the claimed cable connector to electrically couple conductive transmission lines is taught in col. 2:12-18. As taught in col. 4:24-31 eight conductive paths (four pairs) may be provided as claimed, and may be contained in a plug / jack as taught in col. 2:58-62, claimed "housing containing electrical conductors" with "one of the fifth and sixth conductors is physically closer to the seventh and eighth conductors." The conductive paths may be crossed via a "capacitive element" to reduce crosstalk in the connector (col. 2:36-62), including between "one of the other fifth and sixth conductors and one of the seventh and eighth conductors" is seen in Fig 3, also showing conductive path pairs. These pairs, however, are not explicitly taught by Adriaenssens to be red, green, and blue conductors for carrying differential analog and digital signals. However, it would have been obvious for one of ordinary skill in the art at the time of the invention to modify the system of Adriaenssens by coloring the conductive paths and allowing analog and digital signals in order to allow a user to accurately differentiate the conductive paths and utilize the connector to carry varying signal types.

With respect to claim 17, the claimed capacitive element "to substantially neutralize the effect of induced capacitive coupling between said physically closer one of said fifth and sixth conductors and said physically closer seventh or eighth conductors" is taught in col. 3 and 4.

With respect to claim 18, the claimed order of connectors is met with reference to Fig. 3 showing four pairs. Examiner notes that when interpreting this claim, numbering of conductors is entirely discretionary.

With respect to claim 19, the claimed arrangement in a line with fourth, third, sixth, second, first, fifth, eighth, and seventh conductor with a capacitive element between the sixth and eighth conductor is met as previously noted by using capacitive elements between conductors. See also Fig. 3. Again, examiner notes that when interpreting this claim, numbering of conductors is entirely discretionary.

With respect to claim 20, the claimed value being selected to equate the inter-conductor capacitance between "the sixth and eighth conductors and the fifth and eighth conductors" is taught in col. 3:33+.

CLAIMS

1. An analog video switch, comprising:
 - a switch to establish different conductive paths between a set of workstations receiving analog video signals and a set of servers sending analog video signals;
 - a memory device to store a predetermined table of response characteristics of a specified conductor path type when said conductor path type receives a set of predetermined frequency tones;
 - a testing circuit in communication with the different conductive paths to record a measured response of said conductive paths to said set of predetermined frequency tones;
 - an equalizer circuit to apply compensation signals to components of said analog video signals in relation to said measured response of said conductive paths to said set of predetermined frequency tones.
2. A switch as in claim 1, wherein the set of predetermined frequency tones are selected between the values of 325KHz and 48 MHz.
3. A switch as in claim 1, further including a plurality of testing circuits and equalizers, one each per component of said analog video signals.
4. A switch as in claim 1, wherein the testing circuit includes at least one computer interface pod and at least one user pod.
5. A switch as in claim 4, wherein the computer interface pod includes circuitry to receive a tone request from the user pod and respond by applying the set of predetermined frequency tones to the conductive paths.
6. A switch as in claim 5 wherein the user pod issues the tone request and determines said measured response.

7. A switch as in claim 1, wherein the equalizer includes a set of low, middle and high filters independently controlled by said compensation signals.

8. Analog video de-skew circuitry for video compensation of color video transmitted on cables having different transmission delays, comprising:

a switch to receive on three inputs respective ones of three color video components, and to select for output two of said three color video components, followed by another two of said color video components, followed by at least one reciprocal of either of said two sets of two color video components;

square-up circuitry to substantially square the edges of each of said pairs of two color video components;

phase detector to detect a phase difference between said squared up color video components;

an integrator coupled to the output of the phase detector;

a digitizer to digitize the output of the integrator;

a processor to produce control signals in response to the output of the integrator; and

delay circuits to impose selective delays on the three color video components based on the control signals.

9. Circuitry as in claim 8, wherein one or more of the square up circuitry, phase detector, integrator, digitizer, and processor are included on a common integrated circuit.

10. Circuitry as in claim 8, wherein the delay circuits include an additive switch controlling a plurality of binary delay values.

11. A method of compensating an analog video component transmitted over an undetermined cable length, comprising:

pre-storing a predetermined table of response characteristics of a specified conductor path type for a number of incremental conductor path lengths, when said conductor path type of said path lengths receive a set of predetermined frequency tones;

(c) fifth and sixth conductors associated with, respectively, positive and negative blue differential analog video signals; and

(d) a seventh and eight conductors associated with, respectively, positive and negative digital data signals;

a housing containing the electrical conductors arranged such that one of said fifth and sixth conductors is physically closer to the seventh and eighth conductors than the other of said fifth and sixth conductors; and

a capacitive element connected between (1) and said other of said fifth and sixth conductors and (2) one of said seventh or eighth conductors.

17. A connector as in claim 16, wherein the capacitive element is valued to substantially neutralize the effect of induced capacitive coupling between (1) said physically closer one of said fifth and sixth conductors and (2) said physically closer seventh or eighth conductors.

18. A connector as in claim 16, wherein the conductors are arranged in a line in the housing in the following order:

- (1) one of the first, second, third, or fourth conductors;
- (2) another of the first, second, third, or fourth conductors;
- (3) one of the fifth or sixth conductors;
- (4) another of the first, second, third, or fourth conductors;
- (5) another of the first, second, third, or fourth conductors;
- (6) the other of the fifth or sixth conductors;
- (7) one of the seventh or eighth conductors;
- (8) the other of the seventh or eighth conductors.

19. A connector as in claim 16, wherein the conductors are arranged in a line in the housing in the following order:

- (1) fourth conductor;
- (2) third conductor;
- (3) sixth conductor;
- (4) second conductor;
- (5) first conductor;
- (6) fifth conductor;
- (7) eighth conductor;
- (8) seventh conductor; and

the capacitive element is connected between the sixth conductor and the eighth conductor.

20. A connector as in claim 17, wherein the value is selected to substantially equate the inter-conductor capacitance between (1) the sixth and eighth conductors and (2) the fifth and eighth conductors.